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A BIBLIOGRAPHICAL NOTICE ON THE REDUVIID
GENUS TRIATOMA (HEMIP.)¹

By ROLAND F. HUSSEY.

The genus *Triatoma* has received much attention during recent years, both from the entomological and from the medical viewpoints. Chagas' discovery that these insects may serve as intermediate hosts in the transmission of trypanosomal diseases of the American tropics awakened an active interest in this genus among Brazilian and Argentine workers, and as a result numerous papers have been published on the biology and taxonomy of the group. Among these are two very important contributions—summaries, in fact, of our knowledge of the genus *Triatoma*—which may be called to the attention of entomologists in general.

The first of these is the "Revisão do genero *Triatoma* Lap.," by Dr. Arthur Neiva, of Rio de Janeiro. During the years 1910 to 1914, Dr. Neiva published a series of thirteen papers on this genus, some dealing with the biology of the Brazilian species, some with the medical aspects of their ecology, and some with their taxonomy. After studying the collections of the principal museums in Europe and in North and South America, he des-

¹Contributions from the Entomological Laboratories of the Bussey Institution, Harvard University, No. 204.

cribed as new some thirteen species, six of which are from North American localities, one from Mexico, one from Cuba, three from South America, and two from tropical Africa. The descriptions, with few exceptions, appeared first in "O Brazil-Medico," a periodical published in Rio de Janeiro, and inaccessible to the great majority of entomologists in this country; but they are transcribed in full in Neiva's "Revisão." A copy of this work has recently come into my hands, and I shall review it here.

After a brief discussion of the general habits of the Reduviidæ, and of the hæmatophagous forms in particular, Dr. Neiva takes up the affinities of the genus *Triatoma*. He finds that the species of this genus, as it was formerly understood, intergrade with those of the genus *Lamus* Stal, and therefore places the latter as a synonym of *Triatoma*. He also found, on examining Stal's type of *Belminus rugulosus*, that it has ocelli, so he likewise reduces *Belminus* to a synonym, saying that this genus was founded on the lack of ocelli: but he makes no mention of the other (and equally important) characters on which Stal based the genus, and I feel that, despite Neiva's opinion, *Belminus* and *Triatoma* must be kept distinct for the present. *Panstrongylus guentheri* Berg is, according to Neiva, very closely allied to the African species of *Triatoma* that he had described a few years before; and therefore *Panstrongylus* too is dropped from the list of valid genera. Neiva's remarks on the genus *Eratyrus* Stal are very indefinite, and lead me to believe that he was doubtful as to its status.

Some twelve pages are then devoted to the biology of the forms which have been studied. Neiva concludes that the species of *Triatoma* are strictly hæmatophagous, and take their food either directly from some warm-blooded host or from other ectoparasites, such as the bedbug or other Reduviidæ, which have fed recently. Oviposition begins within thirty days after mating; a single female lays from 160 to 220 eggs, which are deposited in small masses containing from 1 to 45 ova. The eggs hatch in from 8 to 16 days, and the nymphs begin to feed three or four days later. The length of the life-cycle varies in the different

forms: in *T. rubrofasciata* it covers 210 days, in *T. megista* 260 days, and in *T. infestans* and *T. sordida* the period is intermediate between these two extremes. Thus there is probably but one brood each year.

Many species have become "domesticated," and some are strictly confined to houses and to outbuildings about farms: such species are *T. megista*, *T. sordida*, *T. sanguisuga*, *T. infestans*, *T. rubrofasciata*, *T. maculata*, and *T. rubrovaria*. Neiva believes that this adaptation is of comparatively recent date, and has been acquired since the discovery of America, since, he says, even to-day the Indian villages are not infested with these insects. The primitive habitats of the species of *Triatoma* are probably nests of various mammals: thus *T. geniculata* occurs in nests of the armadillo *Dasypus novemcinctus* L., while the North American *T. neotomæ* has been taken only in nests of the wood-rat *Neotoma*, and the South American *T. brasiliensis*, though now domesticated, is frequently found in nests of the rodent *Cerodon rupestris* Wied. The domesticated species have received many vernacular names, of which Neiva lists some twenty-five.

The genus is then considered from the taxonomic aspect. Laporte's original description is quoted in full. Then follow twelve pages devoted to the type species, *Triatoma rubrofasciata* (DeGeer), with quotations from Wolff, Latreille, Burmeister, Amyot et Serville, Blanchard, Herrich-Schäffer, Stal, and Walker, and with a very brief and unsatisfactory redescription of DeGeer's type, which is to be found in the Stockholm Museum. Neiva believes that this species is a native of India, and that it was introduced into America and elsewhere through the medium of commerce. This opinion, which is diametrically opposed to that of Kirkaldy¹, is based on the wide-spread distribution of this form in the Old World and on the fact that in America it is confined strictly to the coastal region.

An annotated list of thirty-six species then follows. *Panstrongylus guentheri*, though previously mentioned as being a

¹Can. Ent., xxxix, 1907, p. 247; Faun. Hawaii, ii, 1910, p. 550.

Triatoma, is omitted here. The original descriptions of Neiva's own species are transcribed in full, and bibliographic references to the others are given. These descriptions, which deal almost entirely with color characters and mention scarcely any structural details, are utterly worthless for the satisfactory identification of the species, and it will be necessary to examine the types in order definitely to fix the forms. This work is soon to be undertaken by Mr. H. G. Barber and myself, and will be reported later.

A bibliography containing 97 titles is appended to the "Revisão."

The other paper, which Mr. Barber has very kindly brought to my attention is the "Contribución al estudio del gen. *Triatoma* Lap." by Eduardo del Ponte, published in Vol. II of the "Revista del Instituto Bacteriológico del Departamento Nacional de Higiene, Buenos Aires," and dated March 1921. The first part of this work, dealing with the anatomy of the *Triatomas*, is original; the chapters dealing with the biology and the systematics of the group are frankly based on Neiva's "Revisão," yet contain much additional material. Of particular interest is the account of the so-called *xenodiagnosis* (Brumpt), which affords an infallible method of diagnosing the early stages of suspected trypanosomal diseases, when the trypanosomes are too few to be detected readily by ordinary methods. Xenodiagnosis consists essentially in allowing an uninfected *Triatoma* nymph to bite the patient and to take up a considerable quantity of blood, after which the insect is placed in an incubator at 30° C. If trypanosomes were present in the patient, and were ingested by the *Triatoma*, they multiply rapidly in the insect and may readily be found.

In his systematic treatment of the genus, Del Ponte has made a very creditable effort to supply the deficiencies in Neiva's "Revisão." He gives good figures and full descriptions of the half-dozen species known to him (*T. circummaculata*, *T. infestans*, *T. platensis*, *T. rubrovaria*, *T. sordida*, and *T. vitticeps*; and description only of *T. megista*). In addition, he gives a full translation of the best description available (usually that of

Stal) for each of the species, with very few exceptions. Unfortunately his translations are often marred by minor inaccuracies. He has also drawn up a tentative synopsis of 35 species, calling it an "Ensayo de una clave teórica para el gen. *Triatoma* Lap." (p. 161), and states frankly that it is based very largely on descriptions and hence must be revised by comparison of actual specimens of the various forms. By some oversight, *T. venosa* (Stal) was omitted from his treatment of genus.

The species of *Triatoma*, as given by Neiva and Del Ponte, are listed below. The synonymies and distributions are taken directly from Neiva's "Revisão," and any additions or comments that I have made are enclosed in square brackets.

Genus TRIATOMA Laporte.

1832, Essai Class. Syst. Hémipt., p. 11.

Orthotype *Reduvius gigas* Fabr.—*Cimex rubrofasciatus* DeGeer.

Conorhinus Laporte, 1832, op. cit., p. 77.

[?] *Belminus* Stal, 1859, Berlin. Ent. Zeitschr., iii, p. 102.

? *Eratyrus* Stal, 1859, op. cit., p. 103.

Lamus Stal, 1859, op. cit., p. 115.

Panstrongylus Berg, 1879, Hem. Argent., p. 167.

[? *Marlianus* Distant, 1902, Ann. Mag. Nat. Hist. (7), x, p. 191 (haplotype *Conorhinus diminutus* Walk.—*Belminus rugulosus* Stal).]

1. **africana** (*Triatoma*) Neiva, 1911, Proc. Ent. Soc. Wash., xiii, p. 239, and 1914, Revis. *Triatoma*, p. 32; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 168.

Locality: Tropical Africa. Type in Kgl. Zool. Museum, Berlin.

2. **arenaria** (*Conorhinus*) Walker, 1873, Cat. Heter., viii, p. 18; Neiva, 1914, Revis. *Triatoma*, p. 33; Del Ponte, 1921, op. cit., p. 169.

Locality: Brazil (Pará). A doubtful species: not recognized.

3. **brasiliensis** (Triatoma) Neiva, 1911, Brazil-Medico, xxv, p. 461, and 1914, Revis. Triatoma, p. 33; Del Ponte, 1921, op. cit., p. 169.

Locality: Brazil (Rio Grande do Norte: Caicó). Habitat, in nests of the Mocó (*Cerodon rupestris* Wied; Rodentia). Type in Instituto Oswaldo Cruz.

4. **chagasi** (Triatoma) Brumpt & Gomez, 1914, Ann. Paul. Med. Chirurg., iii, No. 4, p. 75; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 169.

Locality: Brazil (Minas Geraes: Serra de Cabral, near Lassance). Habitat, in nests of *Cerodon rupestris* Wied.

5. **circummaculata** (Conorhinus) Stal, 1859, Berl. Ent. Ztschr., iii, p. 114; Neiva, 1914, Revis. Triatoma, p. 35; Del Ponte, 1921, op. cit., pp. 163, 170, fig.

Localities: Uruguay; Argentina.

6. **dimidiata** (Reduvius) Latreille, 1811, in Rec. d'Observ. Zool., Voy. Humboldt et Bonpland, p. 223, pl. xv, fig. 11; Neiva, 1914, Revis. Triatoma, p. 36; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 171.

- 6a. **dimidiata maculipennis** (Conorhinus) Stal, 1859, Berl. Ent. Ztschr., iii, p. 111; Champion, 1899, Biol. Centr.-Amer., Rhynch.-Het., ii, p. 207, pl. xii, fig. 21 (Conorhinus); Neiva, 1914, Revis. Triatoma, p. 36; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 172.

Localities: Mexico; Honduras; Costa Rica; Guatemala; Nicaragua; Panama; Venezuela; Ecuador; Peru.

7. **flavida** (Triatoma) Neiva, 1911, Brazil-Medico, xxv, No. 44, p. , and 1914, Revis. Triatoma, p. 38; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 172.

Locality: Cuba. Type in U. S. National Museum.

8. **geniculata** (Reduvius) Latreille, 1811, in *Rec. d'Obs. Zool., Voy. Humb. et Bonpl.*, i, p. 225 [Neiva says p. 151], pl. xv, fig. 12; Stal, 1859, *Berl. Ent. Ztschr.*, iii, p. 116 (Lamus); Neiva, 1914, *Revis. Triatoma*, p. 39; Del Ponte, 1921, *Rev. Inst. Bact. Bs. Aires*, ii, No. 6, p. 173.

lutulentus (Conorhinus) Erichson, 1848, in Schomburg, *Versuch Faun. Flor. Brit. Guiana*, iii, p. 614.

corticalis (Conorhinus) Walker, 1873, *Cat. Heter.*, viii, p. 17.

Localities: Peru; Venezuela; French Guiana; Brazil; Paraguay. Primitive habitat, nests of *Dasypus novemcinctus* L. (Edentata).

9. **gerstaeckeri** (Conorhinus) Stal, 1859, *Berl. Ent. Ztschr.*, iii, p. 111; Neiva, 1914, *Revis. Triatoma*, p. 40; Del Ponte, 1921, *Rev. Inst. Bact. Bs. Aires*, ii, No. 6, p. 174.

Localities: Southern United States; Mexico.

10. **guentheri** (Panstrongylus) Berg, 1879, *Hem. Argent.*, p. 168; Neiva, 1914, *Revis. Triatoma*, p. 6, in text [not treated in list of species].

Locality: Argentina.

11. **heidemanni** (Triatoma) Neiva, 1911, *Brazil-Medico*, xxv, No. 44, p. , and 1914, *Revis. Triatoma*, p. 41; Del Ponte, 1921, *Rev. Inst. Bact. B. A.*, ii, No. 6, p. 175.

Localities: Pennsylvania; Tennessee; Illinois; Texas. Type in U. S. National Museum.

12. **howardi** (Triatoma) Neiva, 1911, *Proc. Ent. Soc. Wash.*, xiii, p. 240, and 1914, *Revis. Triatoma*, p. 43; Del Ponte, 1921, *op. cit.*, p. 175.

Locality: Tropical Africa. Type in Kgl. Zool. Museum, Berlin.

13. **indictiva** (Triatoma) Neiva, 1912, *Brazil-Medico*, xxvi, No. 3, p. , and 1914, *Revis. Triatoma*, p. 44; Del Ponte, 1921, *op. cit.*, p. 175.

Localities: Arizona (Kerville); Texas. Type in U. S. National Museum.

14. **infestans** (Reduvius) Klug, 1834, in Meyen's Reise um die Erde, i, p. 412; Neiva, 1914, Revis. Triatoma, p. 45; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, pp. 164, 176, fig.

renggeri (Conorhinus) Herrich-Schäffer, 1848, Wanz. Ins., viii, p. 71, fig. 838.

sextuberculatus (Conorhinus) Spinola, 1852, in Gay's Hist. Chile, vii, p. 218.

octotuberculatus (Conorhinus) Philippi, 1860, Reis. Atacama, p. 173 (nymph).

paulseni (Conorhinus) Philippi, 1860, op. cit., p. 174. (Nymph.)

gracilipes (Conorhinus) Philippi, 1860, op. cit. p. 174. (Nymph.)

gigas (Conorhinus) Burmeister, 1861 (nec Fabricius), Reise La Plata Staat., i, p. 167.

Localities: Brazil; Bolivia; Paraguay; Uruguay; Argentina; Chile.

15. **lignaria** (Conorhinus) Walker, 1873, Cat. Heter., viii, p. 17; Lethierry et Severin, 1896, Cat. Gén. Hém., iii, p. 117 (Eratyrus); Distant, 1902, Ann. Mag. Nat. Hist. (7), x, p. 192 (Lamus); Neiva 1914, Revis. Triatoma, p. 46; Del Ponte, 1921, Rev. Inst. Bact..Bs. Aires, ii, No. 6, p. 177.

Locality: Guiana. [Locality omitted by Neiva, 1914, op. cit.]

16. **maculata** (Conorhinus) Erichson, 1848, in Schomburg, Versuch. Faun. Flor. Brit. Guiana, iii, p. 614; Stal, 1859, Berl. Ent. Ztschr., iii, p. 108 (Conorhinus; as new); Neiva, 1914, Revis. Triatoma, p. 47; Del Ponte, 1921, op. cit., p. 177.

?*nigromaculata* (Conorhinus) Stal, 1872, Enum. Hem., ii, p. 111.

Localities: Venezuela; British Guiana; Brazil.

17. **maxima** (Conorhinus) Uhler, 1894, Proc. Calif. Acad. Sci. (2), iv, p. 286; Neiva, 1914, Revis. Triatoma, p. 48; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 178.

Localities: California; Lower California.

18. **megista** (Conorhinus) Burmeister, 1835, Handb. d. Ent., ii, pt. 1, p. 246; Stal, 1859, Berl. Ent. Ztschr., iii, p. 115 (Lamus); Neiva, 1914, Revis. Triatoma, p. 48; Del Ponte, 1921, op. cit., pp. 165, 179.

porrigens (Conorhinus) Walker, 1873, Cat. Heter., viii, p. 19.

Localities: British Guiana; Brazil.

19. **mexicana** (Triatoma) Neiva, 1912, Brazil-Medico, xxvi, No. 3, p. , and 1914, Revis. Triatoma, p. 50; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 180. [Not *Conorhinus mexicanus* Herrich-Schäffer, 1848, Wanz. Ins., viii, p. 71, figs. 839, 840, = *Meccus mexicanus* (H. S.) Stal, 1859, Berl. Ent. Ztschr., iii, p. 105.]

rubrofasciata (Conorhinus) Champion, 1899 (nec DeGeer), Biol. Centr.-Amer. Rhynch.-Het., ii, p. 208, pl. xii, fig. 22.

Locality: Mexico.

20. **migrans** (Triatoma) Breddin, 1903, Sitz.-Ber. Ges. Naturf. Freunde Berlin, p. 11; Neiva, 1914, Revis. Triatoma, p. 52; Del Ponte, 1921, op. cit., p. 181.

?*phyllosoma* (Conorhinus) Herrich-Schäffer, 1848, Wanz. Ins., viii, p. 70, fig. 837. (Name pre-occupied: Burmeister, 1835.)

Locality: Java.

21. **neotomae** (Triatoma) Neiva, 1911, Brazil-Medico, xxv, p. , and 1914, Revis. Triatoma, p. 53; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 181; Schwarz, 1901, Proc. Ent. Soc. Wash., iv, p. 398 (without name).

Localities: Texas; Arizona. Habitat, in nests of *Neotoma albigula* Hardl. and *N. micropus* Baird (Rodentia). Type in U. S. National Museum. [Neiva also gives New Mexico and California; but the data for this species and for *T. uhleri* appear to have been confused.]

22. **nigromaculata** (Conorhinus) Stal, 1872, Enum. Hem., ii, p. 111; Neiva, 1914, Revis. Triatoma, p. 55; Del Ponte, 1921, op. cit., p. 182.
variegata (Conorhinus) Stal, 1859 (nec Drury), Berl. Ent. Ztschr., iii, p. 113; Walker, 1873, Cat. Heter., viii, p. 18
 ?=*maculata* Erichson 1848.

Locality: Venezuela. Type specimen not found.

23. **occulta** (Triatoma) Neiva, 1911, Brazil-Medico, xxv, p. , and 1914, Revis. Triatoma, p. 56; Del Ponte, 1921, op. cit., p. 182.
discipennis (Conorhinus) Stal, MS. (Berlin Museum.)

Locality: Texas. Type in Kgl. Zool. Museum, Berlin.

24. **ocellata** (Triatoma) Neiva, 1914, Revis. Triatoma, p. 55; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 182.

Locality: Arizona (Mohave). Type in U. S. National Museum.

25. **platensis** (Triatoma) Neiva, 1913, Anal. Mus. Nac. Buenos Aires, xxiv, p. 197, and 1914, Revis. Triatoma, p. 57; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, pp. 165, 183, fig.

Locality: Argentina (Pampa central). Type in Museo Nacional de Buenos Aires.

26. **protracta** (Conorhinus) Uhler, 1894, Proc. Calif. Acad. Sci. (2), iv, p. 284; Neiva, 1914, Revis. Triatoma, p. 58; Del Ponte, 1921, op. cit., p. 183.

Localities: Utah; California; Lower California.

27. **recurva** (Conorhinus) Stal, 1868, Hem. Fabr., i, p. 124; Neiva, 1914, Revis. Triatoma, p. 59; Del Ponte, 1921, op. cit., p. 184.

Locality: Brazil.

28. **rubida** (Conorhinus) Uhler, 1894, Proc. Calif. Acad. Sci. (2), iv, p. 285; Neiva, 1914, Revis. Triatoma, p. 59; Del Ponte, 1921, op. cit., p. 184.

Locality: Lower California.

29. **rubrofasciata** (Cimex) DeGeer, 1773, Mém. Hist. Ins., iii, p. 349, pl. xxxv, fig. 12; Neiva, 1914, Revis. Triatoma, pp. 20-32; Del Ponte, 1921, op. cit., p. 162.

gigas (Reduvius) Fabricius, 1775, Syst. Ent., p. 729.

erythrozonias (Cimex) Gmelin, 1788, Syst. Nat. Edn. 13, i, pt. 4, p. 2181.

?*phyllosoma* (Conorhinus) Herrich-Schäffer, 1848, Wanz. Ins., viii, p. 70, fig. 837. (Name pre-occupied, Burmeister, 1835.)

stalii (Conorhinus) Signoret, 1861, Ann. Soc. Ent. France (3), viii, p. 967.

rubrovarius (Conorhinus) Stal, 1868, *partim*, Hem. Fabr., i, p. 124.

[*rufofasciata* (Triatoma) Van Duzee, 1916, Check-List Hem. N. Amer., p. 29, No. 742; and 1917, Cat. Hem. N. Amer., p. 248. 742.]

Localities: China; Formosa; Philippines; Borneo; New Guinea; Tonga; Java; Sumatra; Singapore; Malay Peninsula; Indo-China; India; Andaman Islands; Ceylon; Seychelles; Mauritius; Madagascar; Zanzibar; Angola; Sierra Leone; Azores; Haiti; St. Thomas; French Guiana; Brazil; Argentina; Hawaii. [Not United States!]

30. **rubrovaria** (Conorhinus) Blanchard, 1843, in D'Orbigny, Voy. dans l'Amér. mérid., vi, pt. 2, p. 219, pl. xxix, fig. 7; Stal, 1868, Hem. Fabr., i, p. 124

(*partim*) (Conorhinus); Neiva, 1914, Revis. Triatoma, p. 60; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, pp. 166, 185, fig.

rubroniger (Conorhinus) Stal, 1872, Enum. Hem., ii, p. 112.

Localities: Brazil; Uruguay. (Not Java!)

31. **rufotuberculatus** (Lamus) Champion, 1899, Biol. Centr.-Amer., Rhynch.-Het., ii, p. 210, pl. xii, figs. 27, 27a; Neiva, 1914, Revis. Triatoma, p. 61; Del Ponte, 1921, op. cit., p. 186.

Locality: Panama.

32. **rugulosa** (Belminus) Stal, 1859, Berl. Ent. Ztschr., iii, p. 102; Neiva, 1913, Mem. Inst. Osw. Cruz, v, p. 74 (Triatoma), and 1914, Revis. Triatoma, p. 62; Del Ponte, 1921, op. cit., p. 187.

diminutus (Conorhinus) Walker; 1873, Cat. Heter., viii, p. 19; Distant, 1902, Ann. Mag. Nat. Hist. (7), x, p. 191 (Marlianus).

Localities: Costa Rica; Colombia; Venezuela.

33. **sanguisuga** (Conorhinus) Leconte, 1855, Proc. Acad. Nat. Sci. Phila., vii, p. 404; Neiva, 1914, Revis. Triatoma, p. 63; Del Ponte, 1921, op. cit. p. 188.

lateralis (Conorhinus) Stal, 1859, Berl. Ent. Ztschr., iii, p. 107.3.

lecticularius (Conorhinus) Stal, 1859, op. cit., 107.2.

lenticularius (Conorhinus) Stal, 1868, Hem. Fabr., i, p. 124.

variiegatus (Conorhinus) Stal, 1872 (nec Drury), Enum. Hem., ii, p. 111; Uhler, 1876, Bull. U. S. Geol. Geogr. Surv., i, p. 331; and other North American authors.

ambigua (Triatoma) Neiva, 1911, Brazil-Medico, xxv, p. 422 (as variety of *sanguisuga*).

Localities: Maryland; Florida; Texas; Argentina (Misiones, in coll. Berg, Mus. La Plata).

34. **sordida** (Conorhinus) Stal, 1859, Berlin. Ent. Ztschr., iii, p. 108; Neiva, 1914, Revis. Triatoma, p. 66; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, pp. 167, 188, fig.

Localities: Brazil; Bolivia; Uruguay; Argentina.

35. **tennuis**¹ (Triatoma) Neiva, 1914, Mem. Inst. Osw. Cruz, vi, fasc. 1, p. 35; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, p. 189.

Locality: Brazil (Bahia).

36. **uhleri** (Triatoma) Neiva, 1911, Brazil-Medico, xxv, p. , and 1914, Revis. Triatoma, p. 66; Del Ponte, 1921, op. cit., p. 190.

Localities: Texas; New Mexico; Arizona; California. Type in U. S. National Museum.

37. **variegata** (Cimex) Drury, 1770, Illustr. Exot. Entom., i, p. 109, pl. xlv, fig. 5; Neiva, 1914, Revis. Triatoma, p. 68; Del Ponte, 1921, op. cit., p. 190.
?claviger (Cimex) Gmelin, 1788, Syst. Nat. Edn. 13, i, pt. 4, p. 2179.

Locality: Antigua. (An unrecognized species, possibly synonymous with *T. rubrofasciata*.)

38. **venosa** (Conorhinus) Stal, 1872, Enum. Hem., ii, p. 111; Neiva, 1914, Revis. Triatoma, p. 70. [Omitted by Del Ponte.]

Localities: Costa Rica; Panama; Colombia.

39. **vitticeps** (Conorhinus) Stal, 1859, Berl. Ent. Ztschr., iii, p. 109; Neiva, 1914, Revis. Triatoma, p. 71; Del Ponte, 1921, Rev. Inst. Bact. Bs. Aires, ii, No. 6, pp. 168, 191, fig.

Locality: Brazil (Rio de Janeiro).

¹So written by Del Ponte. The Zoological Record for 1914 writes *T. tenuis*.

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PROCEEDINGS OF THE CAMBRIDGE ENTOMOLOGICAL CLUB.

At the meeting of October 11, 1920, Prof. W. M. Wheeler read a paper by himself and Mr. L. H. Taylor on parasitism of *Vespa arctica* upon *Vespa diabolica* which was published in December 1921. A discussion followed on parasitism in general and especially the habits of *Stylops* in *Andrena*, *Halictus* and other Hymenoptera.

Dr. R. Heber Howe showed remains of beetles from peat deposits at Eastham, Cape Cod, Mass., between layers of glacial till and too far away from present outcrops to be of recent origin.

At the meeting November 8, Mr. L. B. Uichanco read a paper on the development of certain unicellular organisms which live symbiotically in the bodies of Aphids. These are found in the ovaries and enter the eggs at an early stage. Later